REMARKS

Minor corrections have been made to the specification. Claim 9 has been amended. Claims 9-14 remain pending. Reconsideration and reexamination of the application, as amended, are requested.

The Examiner rejected claims 9-14 under 35 USC §103(a) as being obvious on consideration of Takahashi in view of Akihiko et al.

The Examiner states "Takahashi teaches in Fig. 30 an IGBT semiconductor device comprising a substrate 1-3 having a region 2 irradiated, crystal defects 44 within the region irradiated, a light metal wiring layer 42 comprising aluminum under the substrate and having an opening under the region irradiated so that radiating rays passing to the region irradiated through the opening generate crystal defects only over the opening."

Applicant believes that the Examiner misunderstands the device disclosed in Fig. 30 of Takahashi. Rather, at column 27, lines 18-24, Takahashi states:

> Thereafter a mask 42 having a prescribed pattern shape is formed by aluminum or stainless steel, for example, as show in FIG. 30. This mask 42 is employed as a screen for selectively irradiating the device with charged particles of proton or the like, for example. As shown in FIG. 30, the device is preferably irradiated from the side of a collector electrode 10.

Thus, item 42 is a mask. Item 10 is a collector electrode. Takahashi does not teach as in claim 9 use of a "metal wiring layer having an opening above the region irradiated, so that radiating rays passing to the region irradiated through the opening generates the crystal defects only under the opening." That is, Takahashi does not teach a metal wiring layer having openings as indicated, such that the structure can be used as indicated. It is the structure which Takahashi does not teach.

Akihiko discloses an aluminum plate which is used as mask. Akihiko also does not disclose a metal wiring layer as required by the semi-conductor device of claim 9.

Thus, the disclosures of the references are not sufficient to provided a prima facie case of obviousness, because they do not have the elements and the distinctions claimed. Therefore, claim 9 is non-obvious over the cited references. Claims 10-14 further define the limitations of claim 9. Applicant does not acquiesce in the rejections of these claims, but it is not necessary to further discuss them at this time.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration and reexamination are requested. Allowance of claims 9-14 at an early date is solicited.

Respectfully Submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, MN 55402-0903
(612) 332-5300

Dated: June 24, 2002

By Curtis B. Hamre
Curtis B. Hamre
Reg. No. 29,165

VERSION SHOWING CHANGES

IN THE SPECIFICATION

Next, a method for manufacturing the IGBT 1 will be described. The manufacturing process similar to an ordinary IGBT are carried out until forming the source [electrodes] -- region-- 23. In other words, the substrate 2 is formed by consecutively forming the n^+ type later 5 on the drain layer 3 and the n^- type layer 7 thereon as shown in Fig. 4A. Thereafter, the gate oxidation layer 15 and the gate electrode 17 are formed successfully as shown in Fig. 4B. Ion implantation of P-type impurities is carried out by using the gate electrode 17 as a mask. Further, N-type impurities are implanted ironically by using both resist layers 81 formed on the gate oxidation layer 15 and gate oxidation layers 17 as a mask as shown in Fig. 4C. The base region 21 with a P^+ type and a pair of the source regions 23 located in the base region 21 are formed simultaneously by carrying out thermal treatment as shown in Fig. 5A.

The crystal defect region 11 is irradiated by the electron-beams radiated from [the] above after removing the resist layer 84 as shown in Fig. 8. The radiation of the beams is carried out at 1 mega electro-volts in energy strength in this embodiment.

IN THE CLAIMS

9. (Twice Amended) A semiconductor device comprising:

a substrate having a region irradiated with radiating rays,

crystal defects within the region irradiated, and

a metal wiring layer located over the substrate, the metal wiring layer being made of a light metal, [he] <u>the</u> metal wiring layer having an opening above the region irradiated, so that radiating rays passing to the region irradiated through the opening generate the crystal defects only under the opening.